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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/824,960
Filing Date: April 03, 2001
Appellant(s): ARMITAGE, GRENVILLE J.

John E. Curtin (Reg. 37,602)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 7/26/05.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of invention contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of correction in the brief is correct.

The Examiner has included below a copy of the rejections from the Final Office Action. These rejections are further clarified in view of Applicant's remarks in the Response to Arguments section.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6189039	*Harvey et al.*	*2-2001*
6131120	*Reid*	*10-2000*

Perkins ed., RFC 2002, http://www.ietf.org/rfc/rfc2002.txt?number=2002, October 1996, pgs. 1-74.

(9)   Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   **Claims 1, 2 and 4-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Perkins ed. (RFC 2002, http://www.ietf.org/rfc/rfc2002.txt?number=2002, October 1996) (hereinafter Perkins) in view of Harvey et al. (US 6,189,039 B1) (hereinafter Harvey).

3.   As for claim 1, Perkins discloses a method of supporting a mobile host on an information network configured for multicast routing, comprising:

defining a subnet (U1) of the network that includes one or more mobile hosts and a first interface of a home router in the network, and identifying the first interface and the mobile hosts with corresponding unicast network addresses (U1.x) (Sections 1.4, 1.5 and 1.7; Both the long-term – or *home* – IP address and link-layer addresses are unicast addresses identified with the mobile nodes. Note that the home router also

has a corresponding IP address and link-layer address.);

assigning the first interface of the home router and the mobile hosts

corresponding group addresses (Mx) according to a defined relation with respect to

said unicast network addresses (Section 4.4, Multicast Datagram Routing);

linking the mobile hosts with the network at corresponding points of attachment

(Section 1.7, Protocol Overview, note registration);

sending a request from a given mobile host to join a group corresponding to a

group address assigned to the given mobile host each time the mobile host links

with the network at a new point of attachment, thereby enabling routers in the

network to track the mobile host as it moves its link with the network from one point

of attachment to another, and to route unicast packets originating from a host

outside the subnet and destined to a given mobile host, by way of a virtual link

defined between the home router and the given mobile host (Section 1.7, Protocol

Overview, note registration and tunneling; Section 4.4, Multicast Datagram Routing,

note joining of group and tunneling).

Perkins does not specifically disclose mapping, at the second interface of the

home router, unicast addresses of packets received at the second interface and

destined to members of the subnet, to the group addresses assigned to the

members of the subnet. Harvey teaches:

identifying a second interface of the home router with a corresponding unicast

network address (U2.x) (IP unicast socket connection, step 112, Fig. 6; col. 6, line

58 – col. 7, line 4); and

mapping, at the second interface of the home router, unicast addresses of

packets received at the second interface and destined to members of the subnet

(U1), to the group addresses (Mx) assigned to the members of the subnet (col. 6,

line 58 – col. 7, line 4; Fig. 6).

Harvey's teachings provide the advantage of allowing communication between

unicast and multicast subnets and minimizing network traffic (col. 1, lines 27-40; col.

1, line 62 – col. 2, line 11). It would have been obvious to one of ordinary skill in the

art at the time of the invention to modify Perkins by mapping, at the second interface

of the home router, unicast addresses of packets received at the second interface

and destined to members of the subnet, to the group addresses assigned to the

members of the subnet in order to allow for communications between unicast and

multicast subnets and minimize network traffic, as taught by Harvey above.

4.   As for claim 2, Perkins teaches a method similar to claim 1, including linking a

given mobile host with the network by way of a wireless link with a base station that

is connected to the network (Section 1.2, Goals).

5.   As for claim 4, Perkins teaches a method similar to claim 1, including assigning

the mobile hosts unique local addresses (Lx) corresponding to the current points of

attachment of the mobile hosts with the information network (link-layer address,

Sections 1.6 and 1.7).

6.   As for claim 5, Perkins teaches a method similar to claim, wherein a local

address is assigned to a given mobile host by a network router associated the host's

current point of attachment with the network (Section 1.7).

7.   As for claim 6, Perkins teaches a method similar to claim 4, including transmitting

information packets from a first mobile host on the subnet (U1) to a second mobile

host on the subnet, by encapsulating the packets with an outer encapsulating

header whose destination address is the group address (Mx) assigned to the second

mobile host (Section 4.4, Multicast Datagram Routing).

8.   As for claim 7, Perkins teaches a method similar to claim 6, including placing the

local address (Lx) of the first mobile host as the source address in the encapsulating

header (Section 1.7).

9.   As for claim 8, Perkins teaches a method similar to claim 7, including placing the

unicast address (U1.x) of the second mobile host as the destination address in an

inner encapsulated header of the packets, and placing the unicast address (U1.y) of

the first mobile host as the source address in the encapsulated header (Sections 1.5

and 1.7).

10.   As for claim 9, Perkins teaches a method similar to claim 4, including transmitting

information packets from a given mobile host on the subnet (U1) to a host outside

the subnet, by encapsulating the packets with an encapsulating header whose

destination address is a group address (Mx) assigned to the first interface of the

home router (Section 1.7; Section 4.4).

11.   As for claim 10, Perkins teaches a method similar to claim 9, including placing

the local address (Lx) of the given mobile host as the source address in the

encapsulating header (Section 1.7).

12.   As for claim 11, Perkins teaches a method similar to claim 10, including placing

the unicast address (U2.x) of the host outside the subnet as the destination address in an inner encapsulated header of the packets, and placing the unicast address (U1.x) of the given mobile host as the source address in the encapsulated header (Sections 1.5 and 1.7).

13.   As for claim 12, Perkins teaches a method similar to claim 1, including transmitting multicast information packets from a given mobile host on the subnet to a group (G) of other hosts on the network, by encapsulating the packets with an outer encapsulating header whose destination address is the group address (M1) assigned to the first interface of the home router (Section 4.4, Multicast Datagram Routing).

14.   As for claim 13, Perkins teaches a method similar to claim 12, including placing the local address (Lx) of the given mobile host as the source address in the encapsulating header (Section 1.7).

15.   As for claim 14, Perkins teaches a method similar to claim 13, including placing the group address (G) of the other hosts as the destination address in an inner encapsulated header of the packets, and placing the unicast address (U1.x) of the given mobile host as the source address in the encapsulated header (Sections 1.5 and 1.7).

16.   **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Perkins in view of Harvey and in further view of Reid (US 6,131,120) (hereinafter Reid). Although obvious to one of ordinary skill in the art, neither Perkins nor Harvey specifically disclose linking a given mobile host with the network by using a modem

that is connected to a public switched telephone network having a server which is

linked with the information network. Reid teaches linking a given mobile host with

the network by using a modem that is connected to a public switched telephone

network having a server which is linked with the information network (col. 1, lines 46-

57; Fig. 1). It would have been obvious to one of ordinary skill in the art to modify

the teachings of Perkins and Harvey by linking a given mobile host with the network

by using a modem that is connected to a public switched telephone network having

a server which is linked with the information network, in order to remotely access a

network as taught by Reid above.

(10) *Response to Arguments*

A. Rejection of Claims 1, 2 and 4-14 Under 35 U.S.C. 103 (a)

Appellant's Argument: Appellant asserts on page 27 of the Brief that the

"multicast sockets" in Harvey are not assigned to a home router and to mobile hosts.

Appellant further asserts on page 28 of the Brief that the combination of Perkins and

Harvey is improper because Harvey is not related to the tracking of a mobile device.

Examiner's Response: As noted in the Final Office Action, the Examiner relies

on Harvey only to teach the mapping between unicast and multicast (group)

addresses. The Examiner finds that, contrary to Appellant's arguments, there is

ample motivation in the references and in the knowledge of one of ordinary skill in

the art for making this combination.

As detailed in the Final Office Action, Perkins discloses a subnet with a home

router and mobile hosts having both unicast and group addresses. Mobile hosts on

the subnet are able to move between points of attachment within the subnet by

establishing virtual links.   Although not relied upon in the rejection since the feature

is taught explicitly by Harvey, the second interface (U2.x, Fig. 2) is also inherent to

the home router of Perkins for receiving communications from outside of the subnet

(see Section 4.5 of Perkins), as understood by one of ordinary skill in the art.   Thus,

Perkins discloses the system of Appellant's Fig. 2 in it's entirety. What Perkins fails

to specifically disclose is the mapping of unicast addresses received at the second

interface to the multicast addresses of the first interface. Harvey is relied upon to

teach this limitation of the claims.

Appellant has failed to fully appreciate the significance of Harvey's teachings,

interpreting them in too narrow of a light, where it would have been obvious to one of

ordinary skill in the art that they have broader implications. Harvey generally

teaches transferring data between subnets (network segments) by mapping between

unicast and group (multicast) addresses. Although Harvey fails to specify that the

nodes in a subnet may be mobile hosts (the primary embodiment of Harvey

discloses subnets arranged in a ring configuration), the teachings of Harvey have

obvious applications in a network having mobile hosts. In other words, the teachings

of Harvey have obvious applications for transferring data between *any* type of

subnet. As explicitly recited in col. 3, lines 9-17, the invention of Harvey may be

implemented in any computer network comprising one or more "network segments."

Such network segments could obviously comprise subnets with mobile hosts, since

such a subnet would meet the definition of "a given portion of a network over which

data in a particular format may be transported without modification." Notably, *all* of

the multiple benefits recited by Harvey in col. 1, line 62 – col. 3, line 14, would carry-

over to a mobile subnet (i.e. none of them are specific to ring networks or fixed

hosts).

Col. 2, lines 34-39, discloses a particularly relevant embodiment which is also

shown in Fig. 6:

> Alternatively, the receiver application, or a network
> administrator, launches the repeater utility, which then converts
> the IP unicast stream back to IP multicast format for re-roadcast
> over the network segment, so that other clients on the segment
> may receive it.

This embodiment teaches precisely the mapping of addresses recited by Appellant

(see also col. 6, line 58 – col. 7, line 4). It further provides the obvious benefit of

allowing a packet addressed to the subnet to be re-broadcast to the relevant group

members. In this embodiment, the "receiver application" (i.e. the application which

receives the packet) is responsible for performing the mapping of the addresses and

re-broadcast of the message. Thus, "the receiver application" is inherently acting as

a router for the subnet in this embodiment. Notably, the receiver application (or

repeater) is software which may reside on a server or other hardware (see col. 3,

lines 36-38). Thus, the Examiner is correct in the interpretation that the repeater is

equivalent to the home router. At the very least, it would have been obvious to one

of ordinary skill in the art at the time of the invention to modify the home router of

Perkins by including a repeater for mapping the addresses in order to minimize

network traffic, increase network efficiency, enhance bandwidth utilization, and

provide for selective streaming of video data, as taught by Harvey (col. 1, line 62 –

col. 2, line 14).

For all of these reasons, claims 1, 2 and 4-14 are properly rejected under 35

USC 103(a) as anticipated by Perkins in view of Harvey.

B.   Rejection of Claim 3 35 U.S.C. 103 (a)

Appellant's Argument: Appellant asserts that because claim 1 is allowable,

dependent claim 3 is allowable for the same reasons.

Examiner's Response: Claim 3 is properly rejected under 35 USC 103(a) for

the same reasons cited with respect to claim 1.

(11)   Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the

Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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July 13, 2006

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